AMENDMENTS
TO
THE WATER QUALITY CONTROL PLAN FOR THE SACRAMENTO RIVER AND SAN JOAQUIN RIVER BASINS

FOR

THE CONTROL OF ORCHARD PESTICIDE RUNOFF AND DIAZINON RUNOFF INTO THE SACRAMENTO AND FEATHER RIVERS

FINAL STAFF REPORT
APPENDIX E

RESPONSE TO PUBLIC COMMENTS ON 5 MAY 2003 STAFF REPORT

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Response to Comments on "Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of Orchard Pesticide Runoff and Diazinon Runoff into the Sacramento and Feather Rivers"; Draft Staff Report for Public Review; 5 May 2003

1. **Douglas Y. Okumura, Assistant Director; Division of Pest Management, Environmental Monitoring, Enforcement, and Licensing; Department of Pesticide Regulation**

Comment 1: Section 1.3.2., Pesticide use data
DPR staff reviewed the pesticide use data presented in this section and the data appear accurate.

Response to Comment 1: The Regional Board appreciates the comment.

Comment 2: Section 2, Numeric water quality objectives for diazinon
DPR supports the establishment of numeric water quality objectives for pesticides because the objectives provide well-defined performance criteria for regulated industries and regulatory agencies alike.

Response to Comment 2: DPR's support of the establishment of numeric water quality objectives is noted and will be taken into consideration as any revisions to the Basin Plan Amendment or Staff Report are made.

Comment 3: Section 2, Implementation plan
Proposed additions to Chapter IV of the Basin Plan that address diazinon runoff into the Sacramento and Feather Rivers should have a heading to identify it as a subsection of "Pesticide Discharges from Nonpoint Sources" and to distinguish it from other pesticide specific plans that will presumably be added in the future.

Response to Comment 3: A new heading has been added as suggested.

Comment 4: Section 2, Implementation plan, element 1.a.
The focus of efforts to reduce diazinon runoff should be attainment of water quality objectives, not management practice implementation as stated in the current proposal.
Recommendation: Revise as follows:

1. "The goals of the orchard pesticide runoff and diazinon runoff control program are:
   a. to ensure <u>compliance with the diazinon objectives for the Sacramento and Feather Rivers through the implementation of appropriate</u> ~~that~~ management practices. ~~are being implemented to control sources of~~

~~diazinon in order to achieve compliance with the diazinon objectives for the Sacramento and Feather Rivers.~~

Response to Comment 4: A change in the text has been made consistent with the recommendation.

Comment 5: Section 2, Implementation plan, element 3
The term "allocations" should be fully described. Are these waste load allocations, load allocations, or both?

Response to Comment 5: The text of item 3 has been deleted.

Comment 6: Section 2, Implementation plan, element 6
DPR agrees that it is important to regularly re-examine water quality objectives. The Regional Board will have an opportunity to revise the objective, if necessary, based on recent advances in bioassessment, water quality criteria methodology and probabilistic ecological risk assessment, and on reviews of updated monitoring information. However, the Regional Board should not be prevented from re-examining the diazinon water quality objective until 2008 if compelling evidence suggests otherwise.

Recommendation: Revise as follows:
[The Regional Water Board will review the diazinon water quality objectives, the diazinon allocations, and the implementation provisions in the Basin Plan]. . . at least once every five years~~, beginning in 2008~~.

Response to Comment 6: In response to this and other comments, the Regional Board is removing the reference to the water quality objectives in the section referenced. The Triennial review process requires review of standards every three years.

Comment 7: Section 2, Implementation plan, element 7
Waste discharge requirements and waivers of waste discharge requirements will be a key element of the implementation plan. Unfortunately, the Regional Board is still considering its conditional waiver for discharges from irrigated lands, so DPR and other reviewers will not be able to consider it as a fully integrated component of the plan. As we stated earlier in comments to the Regional Board regarding the proposed waiver, DPR advocates a waiver with conditions that are flexible and foster an efficient use of both DPR's and the Regional Board's authorities in order to achieve water quality objectives. We will continue to provide comments to the Regional Board as it considers options for its waiver.

Response to Comment 7: The Regional Board appreciates the comment. The Regional Board will take this comment into consideration as it deliberates on waivers of WDRs or WDRs that will implement this Basin Plan Amendment.

Comment 8: Section 2, Implementation plan, element 8
The proposal may obligate meeting attendees to discuss subjects that may not be clearly defined, such as trends in pesticide use and performance of novel management practices.

Recommendation: Consider a more generic approach and revise as follows:

Regional Board staff will meet at least annually with staff from the Department of Pesticide Regulation and ~~the County Agricultural Commissioners~~ representatives from the California Agricultural Commissioners and Sealers Association to review ~~trends in~~ pesticide use and instream pesticide concentrations during the dormant spray season and to ~~identify promising mitigation measures~~ consider the effectiveness of management measures in meeting water quality objectives.

Also, DPR would support the inclusion of other stakeholders, such as representatives from the University of California and agricultural industries, at these meetings.

Response to Comment 8: The suggested change in language has been made. Regional Board staff agrees that other interested stakeholders can be invited to participate.

Comment 9: Section 2, Implementation plan, elements 9 and 10
Elements 9 and 10 express concepts that are unfamiliar to many affected stakeholders, so it is important to state these concepts as clearly and completely as possible. As proposed, there is not enough information for stakeholders to understand the concepts of load capacity or load allocation, and the omission of a conversion factor prevents interested parties from calculating either. Also, footnote a., which supplements element 9, comments on information that is not introduced until element 10.

Recommendations: Replace the proposed element 9 with the following:

9. Loading capacity is the greatest amount of a material, in this case, diazinon, that can be introduced into a water body and still meet water quality objectives. As flow rates increase, a water body can assimilate more of a constituent and loading capacity increases. Loading capacity is expressed as

$$LC = C_{wqo} \times Flow \times Conv., \text{ where}$$

- LC = the loading capacity (g/day),
- C_{wqo} = the water quality objective (µg/L),
- Flow = the waterbody's flow rate expressed in cubic feet per second (cfs), and
- Conv. = 2.445, a conversion factor to standardize metric (e.g., µg/L) and U.S. customary (e.g., cfs) units of measurement.

The loading capacity will be calculated for the Sacramento River at I Street in Sacramento, the Sacramento River at Colusa, and the Feather River near its mouth.

(Note: This comment may help clarify the description of loading capacity provided in section 5.7.)

Amend element 10 as follows:

1. Load allocations are the portions of a water body's loading capacity that are allowable from specific upstream sources. Load allocations for diazinon in the lower Sacramento River watershed ~~The Load Allocations~~ are determined by multiplying the ~~L~~load ~~C~~capacity calculated for the Sacramento River at I Street in Sacramento by the ~~L~~load ~~A~~allocation factors in Table IV-5.[a] If the ~~L~~load ~~A~~allocation for the Feather River or the Sacramento River at Colusa is greater than the ~~L~~loading ~~C~~capacity for those sites, then the ~~L~~loading ~~C~~capacity for that site applies.[b] ~~The Load Allocations establish the allowable diazinon load from nonpoint source discharges.[b]~~

Response to Comment 9: Regional Board staff has made changes in the proposed Basin Plan language to clarify the meaning and application of loading capacity, load allocations, and waste load allocations.

Comment 10: Section 2, Surveillance and Monitoring

This section is proposed for inclusion in the Basin Plan's Chapter V, which describes the methods and programs the Regional Board uses to acquire water quality information. The chapter notes that surveillance and monitoring activities rely on measurements of key chemical and physical parameters and biotoxicity. Seven specific types of monitoring are provided to illustrate these principles. Currently, no provisions in Chapter V support other types of monitoring, such as information gathering on management practice implementation. Therefore, some elements in the proposed "Orchard Pesticide Runoff in the Sacramento Valley" do not conform to the descriptions of surveillance and monitoring presented in the current Basin Plan.

Recommendation: Delete elements 3, 4, 5, and 6 from the proposal or further amend Chapter V to accommodate collection of information on management practice effectiveness and costs, management practice implementation, and pest management alternatives and their potential effects on water quality.

Response to Comment 10: The monitoring goals have been moved to the "Special Studies" section of the Surveillance and Monitoring Chapter. We believe the monitoring requirements are consistent with the purpose of the Surveillance and Monitoring Chapter of the Basin Plan. It should be noted that this Chapter also includes assessment of management practices as part of the *San Joaquin River Subsurface Agricultural Drainage Monitoring Program* special study. The Regional Water Board believes that evaluation of information on implementation and effectiveness of management practices is critical to determining the success of this program.

Comment 11: Section 5.1, Pest management options

The explanation of pest management options, though very general, is clear and accurate. The pesticide use report values are reasonably accurate as well.

Response to Comment 11: The Regional Board appreciates the comment.

Comment 12: Section 5.1, Counties included in the Sacramento Valley
In the caption to Figure 5.1 (page 47), Shasta County is listed as one of the Sacramento Valley counties, but it is not listed in Figure 1.3. Is this correct, or was Shasta County left off the list in Figure 1.3?

Response to Comment 12: Figure 1.3 presents information on diazinon use on almonds, peaches, and prunes. The available data from the National Agricultural Statistics Service indicates that none of those crops were harvested in Shasta County.

Comment 13: Section 5.5.3.2, Determining recommended load allocations
As proposed, load allocations are based on the planted area of each of the three main crops (almonds, peaches, and prunes) in each sub-watershed (pages 76-77). This approach assumes that the relative use of organophosphate (OP) insecticides during the dormant season is the same across the three crops. However, peach growers are more reliant on OP dormant sprays than almond and prune growers and have fewer opportunities to use reduced risk alternatives. Watersheds with relatively high proportions of peaches may have a difficult time meeting runoff reduction goals and maintaining load allocations because there may be disproportionately high use of OPs there.

Recommendation: Include in the staff report a discussion of the use of OP dormant sprays in almonds, peaches, and prunes relative to the total planted acreage. Also, provide information on the prospects of reduced OP dormant spray use in almonds, peaches, and prunes based on current pest management alternatives and costs.

Response to Comment 13: A discussion of the use of diazinon relative to overall dormant spray use is included in Section 5.1 of the report. The alternatives available for each crop and the pest pressures experienced by almonds, peaches, and prunes are discussed more extensively in two Regional Board reports referenced in the staff report (Reyes and Menconi, 2002; and Karkoski, et al., 2002).

As discussed in the staff report (Section 5.5.3.2), staff did not recommend an allocation scenario based on current data on diazinon use. A diazinon use-based allocation approach could serve as a disincentive to pursue alternative pest control options. In addition, there are likely to be greater variations in use patterns than land use patterns, so a land use-based allocation approach is likely to be more stable.

Comment 14: Section 8.1, Estimated costs for improved management practices,
Tables 8.1-8.4

Recommendation: The tables should be referenced and described in the text.

Response to Comment 14: Additional text has been added to the section, as suggested.

Comment 15: Section 8.1, Estimated costs for improved management practices, Table 8.5 and associated text

a. None of the treatment scenarios described in the table or associated text include costs for in-season use of OPs, which is a common practice. (Section 8.1.1. notes that the base case may include an in-season application of OPs, but no cost information is provided in Table 8.5.) Also, diazinon is rarely used in-season, though other OPs commonly are.

Response to Comment 15(a): Costs for in-season applications (pesticide, plus application costs) are multiplied by probability of needing in-season application and added into "total cultural costs". In-season use of OPs is included in the "Base case" scenario. Diazinon is listed by Zalom et al (1999) as one of the insecticides that can be used on most of the orchard crops of interest for in-season applications. Since it is also one of the cheaper alternatives, for purposes of the cost analysis diazinon use was assumed for the base case.

b. Application costs are the same in all scenarios and apparently do not account for pest management options that require several applications per year. For example, the scenario of a dormant oil application and two *Bacillus thuringiensis* applications should account for $60 in application costs.

Response to Comment 15(b): Multiple application costs are considered and shown in Appendix F of the Draft Staff Report. The "total cultural costs" for dormant oil and two Bt applications include $60 for application costs.

c. Costs for the use of Trilogy are presented, but this pesticide is very rarely used.

Response to Comment 15(c): The potential use of Trilogy is presented as an alternative to diazinon in Zalom, et al (1999). The cost analysis does not necessarily represent what is currently used, but describes potential alternatives.

d. It is not clear why the mix and high risk scenarios would be categorized as such. The major difference between the mixed scenario (which is supposed to include high and low risk options) and the high risk scenario is that the mixed scenario has a dormant diazinon application and the high risk has a dormant

pyrethroid application; neither employs any low risk practices. To be consistent, the dormant diazinon application might be considered the high risk option and the mixed option should include at least one low risk practice.

Response to Comment 15(d): The scenarios are meant to represent a range of practices for the purpose of comparing relative costs. The "mixed" scenario represents a combination of high risk and low risk options. Section 8.1.3 of the Staff Report describes the "mix" of low and high risk options for each crop.

e. Check the application rate of Trilogy.

Response to Comment 15(e): The application rate appears to be consistent with that reported in Zalom, et al (1999) and the label rate.

f. The table indicates that a miticide (Omite [propargite]) might be required when diazinon is applied in the mix scenario, but not in the base case scenario. An explanation would be helpful.

Response to Comment 15(f): The tables have been corrected. Miticides are often necessary after the use of pyrethroids because the pyrethroids kill mite predators (i.e. the "High risk to water quality" scenario). Zalom, et al. (1999) includes miticides as part of their pyrethroid use strategies. The use of miticides is due to the pyrethroids, not diazinon.

g. The base case has a 0.35 probability of needing an in-season application, but no in-season application costs are listed.

Response to Comment 15(g): In-season application is assumed to use diazinon (see response to comment 15a, above), which is included on the spreadsheet. The equation for "total cultural costs" includes the per acre cost of diazinon ($19) plus the per acre cost of application ($20) times the probability of needing an in-season application (0.35), plus all other costs.

h. There is not enough information in the report to determine if the probabilities of needing in-season applications are accurate.

Response to Comment 15(h): The probabilities were determined from data in the pesticide use reports. If a grower used a given dormant spray (e.g. diazinon), the PUR database was searched for that grower's ID number after the dormant season to determine whether the grower required additional in-season applications to control insects. A detailed explanation of how the probabilities were derived from the PUR database is given in Appendix F.

Comment 16: Section 8.2, Watershed-wide monitoring. A number of comments are made regarding the appropriateness of the monitoring discussed in Section 8.2.

Response to Comment 16: No changes are proposed in response to the comments. This section of the report only provides cost estimates for a monitoring program and does not create specific monitoring program requirements. The actual costs may differ depending on the specific monitoring and reporting program that is developed. The specific sites that are monitored and time of year may change depending on the results of previous years' monitoring and changing pesticide use patterns.

Comment 17: Section 9.3.4., Use of carbofuran
Carbofuran is not currently registered for use on dormant fruit and nut trees.

Response to Comment 17: The text has been modified to address the comment.

Comment 18 Appendix A, Section 4.5, Pesticide use data
DPR staff reviewed the Regional Board's calculations of various pesticide use measures. Their results differed insignificantly from the Regional Board's.

Response to Comment 18: The Regional Board appreciates the comment.

2. David B. Weinberg, Howrey LLP, Attorneys at Law; Representing Makhteshim-Agan of North America, Inc.

Comment 1: Summary: The DPA fails to reflect current monitoring data, which indicate a clear and sustained decline in Sacramento/Feather watershed diazinon levels. Recommendation: These additional data should be incorporated in Figure 1.2. Another figure should be added showing the consistent reductions in levels since 1992, which is important to understanding the current situation but not made clear in Figure 1.2. Also, add the figure set forth below [figure provided in comments but not shown]. In addition, the text of the first and second paragraphs of the draft Plan Amendment at page 6 should be edited to note that diazinon levels are steadily declining.

Response to Comment 1: Regional Board staff has included the currently available monitoring data in the staff report and appendices that are available for the dormant season and water bodies of interest. Figure 1.4 has been updated, since it shows trends over time. Figure 1.2 was not updated, since it shows the diazinon concentrations by month and new data does not indicate a different seasonal pattern of elevated levels of diazinon. Appendix A of the staff report has several figures that provide time series box plots for available data for several sites in the Sacramento River watershed. The text in the staff report has been modified and includes a more extended discussion of diazinon levels in major water bodies in the Sacramento watershed. The suggested figure is not included in the staff report, since the calculation of the means are biased low based on the assumption that "non-detect" equals "zero" and months outside of the dormant season are included.

Comment 2: Summary: The DPA fails to acknowledge the significant regulatory actions that have been taken by CDPR – pursuant to the Management Agency Agreement – to address diazinon detections in surface water. Recommendation: Delete second and third paragraphs on page 8, replace with the following:

> In February 2003, CDPR placed into reevaluation its authorization of the use of diazinon as a dormant spray. CDPR stated that this was done because of concerns with water quality impacts of this use. All diazinon registrants have since responded by forming a task force and jointly proposing supplemental label provisions that will require use of additional specified best management practices. CDPR is expected to impose these or similar requirements on registrants before the start of the 2003-04 use season. These requirements will supplement those resulting from USEPA reregistration of diazinon, which also is imposing additional limits on the use of diazinon as a dormant spray. These requirements all will be enforceable pursuant to Federal Insecticide Fungicide Rodenticide Act and the California Food and Agriculture Code, and CDPR and

the County Agricultural Commissioners have stated their intention to aggressively enforce them.

Response to Comment 2: The text of the staff report has been modified to reflect the current diazinon regulatory activities by CDPR and the USEPA.

Comment 3: Summary: The DPA misattributes the cause for decreasing diazinon use to crop value declines. Recommendation: The text beginning one paragraph from the bottom of page 8 through page 9 should be deleted and replaced with the text set forth below; and Figure 1.3 should be revised to show only usage (not pricing).

> Pesticide use data collected by County Agricultural Commissioners has demonstrated a considerable reduction in diazinon use over the past decade. *See* tables – [to be inserted]. This appears to reflect the emergence of other products to control target pests, as well as label changes mandated by USEPA as a result of its reregistration of diazinon. There is no indication that substantial increases in diazinon uses, especially as a dormant spray on trees, is likely to increase in the foreseeable future. To the contrary, the recent announcement by Syngenta Agricultural Products, Inc. that it is surrendering its diazinon registrations and ceasing marketing for all uses because of economic considerations appears to confirm this expectation.

Response to Comment 3: Additional text has been added to clarify that commodity price is one of the factors that has likely contributed to the decrease in diazinon use. Regional Board staff agrees that the use of other, often less expensive products, has likely contributed to the decrease in use. Regional Board staff does not believe that diazinon label changes, which have yet to take effect for dormant orchard applications, can be identified as a reason for past decreases in diazinon use.

Comment 4: Summary: The DPA erroneously suggests that Federal law requires the specified amendment to the Basin Plan and misses an opportunity to clarify that the "toxicity" water quality objective does not apply to a situation properly addressed by the "pesticides" objective.[Section 1.4]. Recommendation: (1) Delete the last sentence in the first paragraph of the section; and (2) revise the third paragraph of the section to read as follows:

> Federal law requires the establishment of a TMDL for water segments listed under Section 303(d) of the Federal Clean Water Act. Under California law, one way to implement a program to meet the TMDL is by adoption of amendments to the Basin Plan. The extensive study that the Regional Board staff has undertaken in connection with diazinon provides a basis for preparing such an amendment, and also for clarifying that the amendment will provide the specific, sole mechanism for regulating diazinon releases.

Response to Comment 4: The staff report has been amended to discuss more fully the circumstances in which the Regional Board must adopt a Basin Plan Amendment to establish a TMDL. The narrative objectives, whether pesticide or toxicity, still apply to diazinon discharges even when a specific diazinon water quality objective is adopted. Based on information available at this time, Regional Board staff believes that the proposed diazinon numeric objectives for the Sacramento and Feather Rivers are consistent with both the narrative pesticide and toxicity objectives. A statement to the effect that the amendment provides the sole mechanism for regulating diazinon releases would be inaccurate, since such releases are or will be regulated by waste discharge requirements and waivers of waste discharge requirements.

> **Comment 5:** Summary: The DPA fails to: (1) adequately define dischargers of "orchard pesticide runoff" and "diazinon runoff"; (2) endorse the conformed use of both current and future agricultural irrigation return flow waiver standards in the diazinon TMDL; and (3) endorse the conformed use of the agricultural irrigation return flow waiver monitoring program in the diazinon TMDL. Recommendation: Revise as indicated on Attachment A. .[1] [Note proposed revisions in Attachment A address the three items identified in Comment 5, as well as other comments raised].

Response to Comment 5: In response to Comment 5 (1), the proposed Amendment has been modified to clarify that the Amendment applies to dischargers that discharge directly or indirectly to the Sacramento and Feather Rivers.

As part of Comment 5(2), the commenter proposed changes to item 7 on pages 20 and 21 of the Draft Staff Report. The proposed changes would include a statement that the Regional Board would rely on DPR to mandate regulations and product use limitations and the Regional Board would supplement these activities through the waiver of WDRs applicable to irrigated lands. DPR has not mandated any changes nor suggested that the Regional Board rely on proposed changes to implement the diazinon objectives, therefore, the suggested language is not being proposed by staff. Staff has removed item 7 and added a conditional prohibition of discharge. The prohibition would not apply if water quality objectives were met, or if waivers of WDRs or WDRS were in place to address the discharge of diazinon.

At this time Regional Board staff does not recommend that the Regional Board restrict implementation options to the waiver of WDRs for irrigated lands to implement this control program. If the Regional Board does not use the waiver of WDRs for irrigated lands to implement this control program, any orchard pesticide runoff specific WDR or waiver would need to be adopted at a Regional Board meeting and the rationale for the regulatory action would be provided at that time.

[1] The Commenter clarified that "conformed use" refers to discharges that comply with the Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands.

The commenter does not include any specific proposed revisions to address Comment 5(3). The section on monitoring has been changed to clarify that any waiver or WDR must conform to the provisions in the Basin Plan.

Proposed revisions to the Basin Plan Amendment identified by the Commenter in their attachment A are addressed in response to other comments below.

Comment 6: Summary: The DPA illegally misapplies the toxicity water quality objective to a pesticide water quality issue. Recommendation: Delete the last sentence of the first full paragraph on page 28 and replace it with the following text:

> Some have read this objective as imposing requirements with regard to pesticides that are different from those set forth in the "pesticide objective." This is not the case: it is a basic principle of law that the more specific governs the more general, and review of the history of development of the "toxicity criterion" reveals that it was understood to be redundant as to pesticides and, in any event, was not subject to the comprehensive analysis required by the Porter Cologne Act before its adoption. The proposed Plan Amendment, when adopted, will make it clear that users of diazinon and those concerned about its impact on waterways should direct their attention to the pesticide objective, not the more general toxicity objective, in evaluating compliance with the Basin Plan.

Response to Comment 6: Regional Board staff does not propose any change to the Staff Report in response to this comment. This issue is addressed in the response to Comment 4.

Comment 7: Summary: The Anti-Degradation Policy cannot be used as support for numeric water quality objectives that do not meet Porter-Cologne Act requirements of achievability and reasonableness. Recommendation: Delete Section 4.4.1 and rename Section 4.4 "Consistency of Alternate Methods with State and Federal Law."

Also, delete the text of Section 4.2.2 and replace it with the following:

> In applying the State Board's anti-degradation policy, Regional Board policy states that "Maintenance of the existing high quality of water means maintenance of 'background' water quality conditions…." Any change in the high quality of the Sacramento or Feather River must be to the maximum benefit of the people of the State as established, in this instance, pursuant to Section 13241 of the Porter-Cologne Water Quality Control Act. Please see Sections 4.3.2 through 4.3.5, and 8 for more information.

Response to Comment 7: The alternative referred to has been clarified as a "no diazinon" alternative. Staff believes that it is reasonable to consider an alternative that would not allow diazinon in the Sacramento or Feather Rivers. As discussed in the Staff Report, monitoring data for the Sacramento River indicates that diazinon is not present in the river until the river receives orchard runoff. Diazinon is not a "natural" pollutant, so it is reasonable to evaluate an alternative in which diazinon is not released into the Sacramento or Feather Rivers. Additional discussion has been added to describe why the water quality objective based on no diazinon was rejected.

> **Comments 8 & 9:** [Each of these comments suggests that the CDFG criteria should be dropped in favor of criteria derived from the Novartis[Syngenta] application of a probabilistic ecological risk assessment methodology [PERA]. The Commenter also recommends that the proposed Basin Plan Amendment language be amended to remove the CDFG criteria and replace it with a 483 µg/L diazinon objective not to be exceeded more than 10% of the time. Based on the references cited and more extensive discussion in the comments, it appears the Commenter meant to recommend a 0.483 µg/L objective]. **Comment 8:** Summary: The DPA diazinon TMDL is based on an outmoded methodology that was not designed for application to non-point source issues and should instead be based on up-to-date, available, applicable non-point source evaluation methodologies methodologies . Recommendation: The analysis underlying the choice of "targets" should be redone with reliance upon CDFG numbers replaced by reliance upon the numbers determined using the Syngenta PERA analysis. **Comment 9:** Summary: The DPA cites scientifically inaccurate and unfounded grounds in its rejection of modern methodologies for target setting. Recommendation: The analysis underlying the choice of "targets" should be redone, with reliance upon CDFG numbers replaced by reliance upon the numbers determined by SSDs.

Response to Comments 8 & 9: The Staff Report has been amended to provide greater detail as to the rationale for rejecting the use of the PERA methodology as applied by Novartis[2].

The MANA comments on the choice of the diazinon water quality objective are based on two fundamental assertions that Regional Board staff does not believe are supported when the available data and information are comprehensively reviewed. One argument is that the USEPA methodology for deriving aquatic life criteria (USEPA, 1985) is outdated, technically irrelevant and not applicable to non-point source pollutant discharges.

A review of the USEPA methodology clearly indicates that the guidelines are focused on establishing contaminant concentration levels that should be protective of aquatic organisms and their uses. The USEPA's justifications for the averaging periods chosen; the allowable frequency of exceedance of criteria; selection of appropriate and relevant

[2] The PERA analysis was conducted on behalf of Novartis prior to its purchase by Syngenta

toxicity test results; and method for the derivation of the criteria all rely on biologically based arguments. Mention is made of wastewater treatment plants only in the context of the relationship between the allowable frequency of criteria exceedance and treatment plant design. Therefore, the guidelines clearly apply to impacts to aquatic life from both point and non-point sources.

The MANA comments also imply that since the USEPA guidelines were created in 1985, eighteen years ago, the science underlying those guidelines no longer reflects current scientific thinking or is no longer relevant. Currently, the1985 guidelines are the only general guidelines for deriving criteria that protect aquatic life that have been approved by USEPA. The 1985 guidelines also serve as the basis for the federal aquatic life criteria promulgated as part of the National Toxics Rule in 1992 and the California Toxics Rule in 2000 (see 40 CFR 131.36(d)(10)). USEPA's recent draft atrazine aquatic life criteria are also based on the 1985 guidelines (see http://www.epa.gov/waterscience/criteria/atrazine/atrazinenar.pdf). The recent application of 1985 guidelines by the USEPA suggests that they are still relevant and applicable for the derivation of aquatic life criteria.

In both the 1985 guidelines (as MANA points out) and the federal requirements under 40 CFR § 131.11, it is acknowledged that other scientifically defensible methods could be employed to derive aquatic life criteria. The PERA effects analysis (as conducted by Novartis) recommended by MANA would not protect aquatic organisms and their uses, would be inconsistent with the law, and has a number of significant scientific and technical flaws. Despite the shortcomings of the Novartis PERA effects analysis, Regional Board staff believes that a properly constructed effects analysis could lead to the derivation of aquatic life criteria that are protective of aquatic organisms and their uses, consistent with the law, and scientifically defensible.

Technical flaws in compiling the toxicity database

One of the primary strengths of the Novartis PERA effects analysis that is asserted by MANA is the number of species (63) included in the effects analysis. A cursory analysis of the species and toxicity tests included in the Novartis effects analysis[3] indicates that little or no screening of these studies was performed. Rather, it appears that all 48-hour or 96-hour aquatic life mortality studies contained in the USEPA AQUIRE database[4] were included in the toxicity database compiled by Novartis.

The toxicity database that Novartis compiled included a number of species that would not be found in freshwater streams or rivers of North America. At least two saltwater species were included (Yellowtail and Zebrafish) and several species that to our knowledge are not established in North America (e.g. Green fish, Golder orf, Oriental weatherfish, Snake-head catfish, Indian catfish, and Crucian carp).

[3] See Table 10 in *Ecological Risk Assessment of Diazinon in the Sacramento-San Joaquin Basins*.; Novartis Crop Protection, Inc., 1997.

[4] The AQUIRE database has since been incorporated into the larger ECOTOX database and can be found at: http://www.epa.gov/ecotox/ .

Additionally, the Novartis toxicity database included toxicity test results that were reported as formulation concentration[5] rather than active ingredient concentration. Combining toxicity test results based on formulation concentration and active ingredient concentration calls into question the effect that is being analyzed – is it the effect of the active ingredient or the formulated product (i.e. active ingredient plus adjuvants)? Appendix G includes a summary of the studies used by Novartis and whether the AQUIRE database indicates that the reported EC50/LC50 concentration is based on active ingredient or formulation. Of the fifty-seven species geometric mean EC50/LC50s calculated by Novartis from the AQUIRE database, forty-eight of those species geometric means are reportedly based on formulation concentration.[6]

Technical flaws in the risk assessment assumptions and conclusions

The USEPA's Environmental Fate and Effects Division in the Office of Pesticide Programs also found a number of significant technical flaws in the Novartis PERA effects analysis (USEPA, 2002a). The USEPA was conducting its analysis as part of the re-registration process for diazinon under the Federal Insecticide, Rodenticide, and Fungicide Act. Senior scientists from USEPA provided the review of the Novartis PERA analysis below.

The most significant findings of USEPA's review of the Probabilistic Ecological Risk Assessment conducted by diazinon's registrants included:

"…EFED [the Environmental Fate and Effects Division] disagrees with the registrant's interpretation of the extent and significance of both direct and indirect effects. EFED believes that the underlying assumptions of the refined risk assessment and the report's conclusions are inconsistent with EPA's mandate to be protective." (see page 1 of USEPA, 2002a)

"It is unacceptable for EFED to dismiss the ecological relevance of entire taxa. It is also unreasonable to believe that the sensitivity of cladocerans is only representative of cladocerans anymore than the sensitivity of bluegill should be interpreted as being representative of only cetrarchid fish. It is unreasonable to assume that community structure is not adversely impacted by the loss of sensitive species and that organisms which may ultimately replace sensitive species will be able to endure the environmental

[5] The formulation concentration is the concentration of the pesticide product (active ingredient plus adjuvant). The actual concentration of the active ingredient (in this case diazinon) will be less. Typical formulations of diazinon for agricultural use include 50% diazinon by weight. If these formulations were used in the toxicity test, the amount of diazinon present at the reported LC50 would be half of the reported formulation concentration.

[6] MANA includes in their comments a discussion of one of the references (Morgan, 1976) from which nine of the species in the Novartis toxicity database originated. MANA states that through a series of contacts the major professor of Morgan was contacted to determine whether the active ingredient was actually measured by Morgan rather than the formulation concentration as reported in USEPA's AQUIRE database. MANA asserts that they have concluded that the active ingredient concentration was actually measured by Morgan. Since the Morgan thesis itself does not appear to support this assertion and there is no other contemporaneous documentation of how Morgan conducted the experiment, Regional Board staff believe it is most appropriate to rely on the USEPA's review of the study as described in the AQUIRE database.

pressures that selected for the niche's original [sensitive] species. …" (see page 14 of USEPA, 2002a)

"While the document is well written and superficially compelling, the underlying assumptions on which the probabilistic assessment is based are not consistent with EFED's mandate to be conservative. EFED does not have the prerogative to dismiss the fact that segments of the invertebrate population will likely succumb even if it is plausible that the organisms will be replaced by less sensitive species. Such disruptions in the aquatic community structure cannot be without consequences and no data are provided to quantify the scale of such secondary effects; the report simply dismisses such effects as unimportant…The authors routinely discount the fact that sensitive species play [a] in role in the food web of affected aquatic communities. …" (see page 14 and 15 of USEPA, 2002a)

Inconsistent with the law

The Commenter suggests that the water quality objective should be established at a level that is estimated to be at or greater than the LC50 for 10 percent of the arthropod species (0.483 μg/L or 6 times higher than the CDFG criteria). The Commenter further suggests that dischargers should be considered to be in compliance with the higher number as long as it is not exceeded more than 10% of the time. Such an approach would allow diazinon levels to increase up to the solubility limits of diazinon without consequence to the dischargers, as long such exceedances occurred 10% or less of the time. Since rainfall/runoff events during the dormant spray application period typically constitute less than 10% of the days during a calendar year, the proposal puts no practical limits on diazinon discharges from orchards.

The water quality objective proposed by the Commenter is clearly inconsistent with the law. The most sensitive uses to be protected (Warm Freshwater Habitat and Cold Freshwater Habitat) are defined as "Uses of water that support warm [or cold] water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, *including invertebrates*" [emphasis added; CRWQCB-CVR, 1998]. Federal law clearly requires that water quality criteria protect the designated use (see 40 CFR § 131.11 (a)), while State law mandates the reasonable protection of beneficial uses (CWC §13241). Establishing an objective at an effect level that is lethal to 10% of arthropod species is unreasonable and will not protect the beneficial use (i.e. it will not support warm or cold water ecosystems).

Comment 10: Summary: The DPA use of 1-hour and 4-day averages is another misapplication of point-source methodology to a non-point source issue and a failure to acknowledge favored, non-point source-relevant methods to establish exceedences. Recommendation: Even if the Draft Plan Amendment continues to rely on CDFG targets, the application of these targets for determining violations based on chemical monitoring data should consider the unique characteristics of non-point source discharges.

Response to Comment 10: See response to comments 8 and 9 on the basis for the USEPA methodology. The USEPA approved methodology for developing aquatic life criteria is biologically based. The averaging periods are meant to limit the duration and magnitude of the exposure of organisms to elevated concentrations of pollutants. The approach advocated by the Commenter, as discussed above, would result in the application of no practical limits on diazinon concentrations for significant periods of time.

It should also be noted that the binomial statistical method discussed by the Commenter is often applied in a manner that is biased towards only identifying a violation when there is statistical certainty that a violation of objectives is occurring; rather than identifying a violation if there is not statistical certainty that objectives are being attained. In practical terms, this means that if there are fewer samples collected, more of those samples must be exceeding the objectives than would be suggested by the 10% exceedance rate. For example, if 20 samples are collected, 5 of those samples (25%) must be above the criteria in order to conclude that objectives are violated (assuming a 90% confidence level). If 100 samples are collected, 15 of those samples (15%) must be above the criteria to conclude that objectives are violated.

> **Comment 11:** Summary: The oft-cited federal support for the use of the CDFG numbers lends little actual support: (1) the EPA "endorsement" actually contains a qualification that renders the endorsement meaningless; and (2) none of the federal letters' narrow support can be construed as support for a broader finding that the CDFG numbers meet the mandated Porter-Cologne Act balancing requirements. [No specific recommendation was provided.]

Response to Comment 11: Regional Board staff has based their recommendations on an evaluation of each alternative relative to the applicable law, as well as the scientific merits of the alternative. Regional Board staff weighed the USEPA's review and comments, together with comments from other interested parties, relative to applicable State and federal law. Comments from federal agencies are considered in light of their expertise and understanding of applicable federal law. Regional Board staff has not assumed that comments from federal agencies imply support for the staff's findings or conclusions relative to State law.

> **Comment 12:** Summary: The DPA presents as scientifically well-established, certain conclusions regarding diazinon impacts to endangered species that are incorrect. Recommendation: Section 4.4.3 should be deleted and replaced with the following text:
>
> > Several species of special concern, including the federally threatened splittail *(Pogonichthys macrolepidotu*s) and the state- and federally-endangered winter-run Chinook salmon *(Oncorhynchus tshawytscha*), occur in the Sacramento and San

Joaquin Rivers and Delta (www.dfg.ca.gov/hcpb/species/t_e_spp/tefish/tefisha.shtml). Under law, the selected water quality objectives must protect these species. The water quality objective is below the proven levels at which deleterious effects on those species from diazinon may occur. The water quality objective is therefore protective of these endangered species.

Response to Comment 12: Regional Board staff has reviewed section 4.4.3 and do not believe it presents any incorrect scientific conclusions regarding diazinon and endangered species. Regional Board staff refer to impacts that could occur rather than stating that impacts are likely to occur or will occur (i.e. the statements do not make conclusions regarding impacts on endangered species). The staff report has been amended to state that the proposed water quality objective appears to be below levels at which deleterious direct or indirect effects to endangered species are likely to occur.

Comment 13 [Section 5.1]: Summary: The DPA fails to defer to the expertise of the regulators (*e.g.*, CDPR) and the regulated community – an unreasonable failure in light of those parties' experience in evaluating, and ongoing efforts to adopt, practical and effective best management practices to control pesticide runoff. Recommendation: This section should be revised to recognize the pending CDPR reevaluation and likelihood that it will result in mandatory use of BMPs to reduce runoff.

Response to Comment 13: Regional Board staff has relied substantially on experts for the staff's evaluation of available management practices. The Regional Board staff reports referenced in Section 5.1 provide a summary of available management practices found in the literature and readily available reports. A discussion has been added to Section 1 regarding CDPR's reevaluation process, as well as potential new label changes required under FIFRA.

Comment 14: Summary: The DPA fails to acknowledge the lead role of CDPR – as the State Water Resources Control Board has already done – in regulating the use of pesticides and corresponding leadership role in creating solutions to water quality impacts stemming from that pesticide use. Recommendation: The Draft Plan Amendment discussion appearing at 49-51 should be revised to emphasize the greater expertise of CDPR in development of BMPs and its sole ability to impose enforceable requirements that must be followed in the application of pesticides. A similar revision should be made to the DPA at 65, section 5.3.11. CDPR should be acknowledged in the Draft Plan Amendment, at 65, as the lead agency on the regulation of pesticide use as it impacts water quality and as playing a central role in TMDL implementation.

Response to Comment 14: Additional text has been added to discuss the role DPR could play in TMDL implementation. This staff report and previous Regional Board staff reports (see Appendix B of the Peer Review Draft Report) have included extensive

discussion of DPR's authorities and responsibilities, as well as their available regulatory tools.

Regional Board staff does not believe it is appropriate or necessary to identify DPR as having the lead role in protecting water quality from pesticide impacts. The Regional Board is responsible for the protection of the State's waters from the discharge of waste, whether such waste contains pesticides or other contaminants. Although it is important that the Regional Board and DPR coordinate their joint regulatory efforts, the Regional Board cannot delegate its mandated responsibilities identified in the California Water Code.

> **Comment 15:** Summary: The DPA fails to reflect the highly-relevant, ongoing, multi-stakeholder efforts to design and implement monitoring in the area to which the diazinon TMDL will be applied and to endorse the efforts being coordinated by the Sacramento Valley Water Quality Coalition. Recommendation: This section should be revised to reflect the anticipated activities of this group, as described in the plan to be submitted to the Regional Board later this month. The Regional Board also should endorse the providing grant funding to support these efforts.

Response to Comment 15: Additional text has been added to describe the recent activities of the Sacramento Valley Water Quality Coalition. It would not be appropriate for the Regional Board staff to endorse funding a particular group or entity.

> **Comment 16: (Section 5.3)** Summary: The DPA fails to reflect the nature and implications of the actions being taken by CDPR and the Agricultural Commissioners – actions which suffice to implement the diazinon TMDL. Recommendation: This section should be revised to recognize the efforts underway by CDPR and the Agricultural Commissioners and that this approach meets most efficiently all of the goals of a TMDL implementation plan.

Response to Comment 16: Regional Board staff believes that Section 5.3 accurately characterizes the authorities and capabilities of DPR and the County Agricultural Commissioners (CACs). Additional text has been added to other sections of the staff report that discuss current DPR activities.

As currently written, the proposed Basin Plan Amendment does not preclude or require action by DPR and the CACs to successfully meet the goals of the Amendment. Monitoring goals three and four refer to the need to track the implementation of management practices and to determine their effectiveness. If DPR and the CACs require the use of specific management practices and have data on their effectiveness, that information can be taken into account in evaluating progress in meeting the diazinon water quality objectives.

Comment 17: Summary: The DPA improperly rejects the appropriate loading capacity analytical method in favor of a less precise, generic method which fails to take into account either the specifics of the locale or the chemical substance being analyzed. Recommendation: The Regional Board should acknowledge the shortcomings of the hydrologically-based approach described in the Draft Plan Amendment at 68-71 and immediately take steps to acquire or collect the data needed to apply the scientifically more pertinent pollutant transport method. Until that information is collected and analyzed, calculation of specific load allocations should be deferred.

Response to Comment 17: The Commenter brings up two different issues with respect to the hydrologically-based method used – one critique is with respect to the loading capacity calculation and another critique appears to be directed at the approach for load allocations.

The Commenter indicates that the method used to calculate the loading capacity is less precise than a pollutant transport model based approach. Regional Board staff disagrees with this assertion. Regional Board staff has proposed that the loading capacity be based on the actual (measured) flow times the water quality objective. The only potential error in the estimate of loading capacity is measurement error (i.e. the measurement of flow).

A pollutant transport model would introduce two general types of errors – measurement errors for any real time input data and model error. The measurement errors associated with estimating loading capacity would include rainfall measurements, reservoir releases, and other flow measurements from various tributaries. The model errors could include, but are not limited to: imprecise estimates of soil properties, including soil moisture content; imprecise or incomplete flow routing algorithms; imprecise estimates of rainfall intensity for areas not gauged; and imprecise estimates of rainfall/runoff from land surfaces.

It should be noted that the measure of the robustness of a hydrologic computer model is primarily based on the estimates the model provides relative to actual measured flow values. Since the measured flow values are used as the yardstick to determine model performance, preference should be given to using the measured flow values to estimate loading capacity, when possible. Using model results to estimate loading capacity would, by the very nature of modeling, require the Regional Board to include an additional margin of safety to account for model errors.

The Commenter appears to assume that the method used to estimate loading capacity (which is focused on the capacity of the receiving water to assimilate pollution) is the same method used to allocate that loading capacity (which is focused on the sources of the pollution). In fact, Regional Board staff did not use a hydrologically-based model to allocate diazinon loads. Loads were allocated based on the relative acres of the three crops that use 99% of the diazinon during the dormant season.

As the Commenter implies, a pollutant transport model could be used to develop load allocations. A pollutant transport model would allow a number of factors to be considered, including partitioning of the pesticide between tree, soil, and air; the amount of diazinon available for washoff from the field; and the effect of slope and soil properties on pollutant transport. As discussed in the Staff Report, data for many of the key variables necessary for a robust pollutant transport model are limited or missing. This makes model validation and calibration difficult. If meaningful model calibration and validation cannot be performed, the model results would be highly questionable.

In summary, Regional Board staff is using the most accurate and plentiful data sources to both estimate the loading capacity (i.e. flow data) and allocate the loads (i.e. land use and pesticide use information). The alternative suggested by the Commenter, a pollutant transport model, is not appropriate at this time since: 1) such a model is not available for the Sacramento River watershed; and 2) even if such a model were developed, it would need to produce accurate, reliable results before it was applied to the development of load allocations or estimating loading capacity. Regional Board staff also believes it is unreasonable to delay assigning allocations in the anticipation of funding for a significant monitoring and modeling effort based on the assumption that such an effort will lead to a more effective, equitable implementation program.

Comment 18 [Section 7.1]: Summary: The DPA goals set forth in section 7.1 are overly complicated and are not needed to establish compliance with the diazinon TMDL. Recommendation: Delete paragraphs 1-4 and 6 of Section 7.1. Instead add the following text:

> The Regional Board is currently in the midst of identifying the details and goals of an extensive monitoring program to support the Agricultural Irrigation Return Flow Waiver. That monitoring program will not only address the needs of the Waiver, but will also meet the Regional Board's requirements for monitoring compliance with the diazinon TMDL. The Regional Board will add the goals and details established in the Waiver effort to this Section when that information becomes available.

Response to Comment 18: Regional Board staff believes that the surveillance and monitoring goals are appropriate and consistent with the proposed program of implementation. Regional Board staff also believes that the establishment of surveillance and monitoring goals is necessary to ensure that the applicable monitoring and reporting programs provide the information necessary to evaluate compliance with this proposed Basin Plan Amendment. Any data developed by the registrants through DPR programs can be used to meet the monitoring goals. If such data and information are not sufficient to address the proposed goals, then additional data collection may be required.

Comment 19: Summary: Regional Board staff and other government representatives have incorrectly suggested that the State Water Resources Control Board's Section 303(d) designation establishes current impairment of the identified water bodies, when in fact it simply results from an estimation of impairment based on limited or inadequate data. Recommendation: To avoid any misunderstanding, the Draft Plan Amendment should be expanded to explain that inclusion of a water body segment on the Section 303(d) list is not a finding of actual impacts to species or a quantification of the extent to which beneficial uses have actually been impaired.

Response to Comment 19: Regional Board staff believes that the characterization of the 303(d) listing in the staff report is correct. Regional Board staff does not believe that the data and information upon which the 303(d) listing was based was either inadequate or limited.

Comment 20: Summary: The peer review process used to test the DPA was neither properly implemented nor successful in subjecting the Amendment to vigorous scientific or policy review. Recommendation: The Draft Plan Amendment should either: (1) acknowledge the lack of scientific rigor and process planning that would typify a peer review process, provide more information on the process that resulted in the reviews, and provide information regarding the reviewer's selections and qualifications; or (2) re-initiate the peer review using more rigorous and publicly disclosed standards for process, qualifications, and end-product; or (3) dispose of the idea of peer review altogether and cease making any claims that a rigorous, impartial, and qualified review took place.

Response to Comment 20: Regional Board staff has included information in Appendix B to describe the peer review process. Regional Board staff met the legal requirements for scientific peer review as described in Health and Safety Code Section 57004 and applicable State and Regional Board guidelines, which have been added to Appendix B. It should be noted the peer review process focuses on the scientific aspects of the proposed regulatory action and that policy review is outside the scope of the peer review process.

3. Roberta L. Larson, Somach, Simmons & Dunn, Attorneys at Law; Representing the City of Roseville

Comment 1: *The Staff Report Does Not Fully Analyze Impacts on Point Source Dischargers.*

The BPA should either expressly state that additional treatment will not be required of NPDES dischargers, or fully analyze the costs to POTWs to add treatment to comply with the objectives at the end-of-pipe.

Response to Comment 1: The analysis contained in the Staff Report indicates that the federal ban on the sale of diazinon for outdoor non-agricultural uses should be sufficient to meet the waste load allocations. Based on that analysis, no additional treatment by NPDES dischargers should be needed, so the additional cost to NPDES dischargers to respond to this Basin Plan Amendment is zero.

The proposed Basin Plan Amendment includes a provision for Regional Board review and potential revision of the proposed control actions. If, at that time, it does not appear the waste load allocations will be met by the federal ban alone, the Regional Board may consider revising the allocations or the compliance time schedule.

As part of the process to adopt this Basin Plan Amendment, NPDES dischargers may also submit additional analysis of costs for POTWs to add treatment to comply with the waste load allocations. Such cost analysis should be based on the anticipated diazinon levels in the effluent and describe the treatment technology required to make the necessary reductions in diazinon.

Comment 2:*The Objectives Should Not Be Applied to Upstream Waters Via the Tributary Statement.*

Response to Comment 2: The numeric water quality objectives for diazinon only apply to the Sacramento and Feather Rivers at this time. The tributary statement only makes water quality objectives applicable to tributaries in the case of general water quality objectives that apply to all waters with a particular beneficial use. The new water quality objective will not change the beneficial uses of tributaries to the Sacramento or Feather River.

Comment 3:*The TMDL Should Recognize that NPDES Permit Holders are De Minimis Sources of Diazinon in the Sacramento River and Therefore No Waste Load Allocations are Required.*

Response to Comment 3: We have reviewed the applicable law and federal regulations with respect to the issue of assigning no waste load allocations. We have also consulted with U.S. EPA (Smith, 2003). NPDES sources have clearly had diazinon in their discharge. Even with the phase out of urban uses of diazinon, there still may be periodic,

detectable amounts of diazinon from NPDES sources for a few years after the proposed compliance date. Since there are existing and anticipated point source discharges, we must assign a waste load allocation. Assigning no waste load allocation would be interpreted as allowing no discharge of diazinon from NPDES sources. We, therefore, believe it is appropriate to assign a non-zero waste load allocation to NPDES sources.

Comment 4:*If WLAs are Imposed on Point Sources, the WLAs Should be Expressed as Implementation of Best Management Practices (BMPs).*

Response to Comment 4: See discussion in the response to Comment #1.

Comment 5: Revise item 3 of the proposed Basin Plan Amendment on page 20 to read:
A discharger of diazinon will be considered to be in compliance with the control program for diazinon runoff into the Sacramento and Feather Rivers if the ~~allocations~~ receiving water quality objectives for diazinon are being met at the nearest load allocation point downstream of the discharger, such points being at the I Street Bridge in the Sacramento River and the upstream tributary sites named in Table IV-5.

Response to Comment 5: Item 3 has been deleted. The Regional Board believes it is important that allocations and water quality objectives be met. If allocations are not met in a given year, yet water quality objectives are met, further effort may be needed to meet the allocations and ensure long-term compliance with water quality objectives.

Comment 6: Revise item 5 of the proposed Basin Plan Amendment on page 20 to read:

The waste load allocations for all NPDES-permitted discharges are the diazinon water quality objectives, taking into account dilution in the receiving water. The waste load allocations for POTWs are to be met by implementation of source control and pollution prevention programs. [Insert language recommended by the City of Sacramento to address stormwater discharges.]

Response to Comment 6: The suggested language regarding the "maximum extent practicable" (MEP) standard is inconsistent with State Board precedential decisions. While the Regional Board may consider whether a discharger is satisfying the MEP standard, the Basin Plan provides the standards that NPDES permits must implement. Basin plan provisions should not depend on MEP language in individual NPDES permits. The language also suggests that MEP always means something less than compliance with water quality objectives, which is not the case; the goal of the iterative process is to achieve objectives.

4. Bill Busath, Supervising Engineer; City of Sacramento

Cecilia Jensen, P.E., Stormwater Program Manager, County of Sacramento (The two commenters submitted comments with identical recommendations. Only the City of Sacramento's comments are reproduced below).

Comment 1: Adoption of DF&G Criteria as Water Quality Objectives Needs Further Study

The proposed revisions to Chapter III, Water Quality Objectives, Tables III-2A (Section 2 of the Staff Report), should be amended as follows:

> a) Replication of DF&G criteria development (toxicity studies) should be performed according to standard scientific principles, and the Specific Pesticide Objectives should be adjusted as deemed appropriate by an independent scientific review panel, following completion of such studies.
>
> b) As the Basin Plan Amendment proposes adoption of the DF&G criteria as site-specific water quality objectives, consideration also should be given to site-specific conditions, including mitigating factors, in the Sacramento River and its major tributaries. A site-specific objectives study should be performed for the major reaches affected by the Basin Plan Amendment, according to procedures contained in USEPA guidance and the State Water Resources Control Board's Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California.

Response to Comment 1: With respect to the Commenter's first point, we believe CDFG used the most appropriate methodology for the development of their diazinon criteria. In addition, CDFG performed a comprehensive review and conducted a rigorous analysis of the adequacy of reported effects levels from numerous studies. The CDFG criteria were developed in accordance with USEPA guidance for deriving aquatic life criteria (USEPA, 1985).

The language proposed would result in the Regional Board requiring technical reports of dischargers to conduct the additional toxicity studies and potentially re-evaluate the proposed diazinon water quality objectives. We do not believe requiring such technical reports are necessary at this time.

With respect to the Commenter's second point, the CDFG criteria were developed according to USEPA guidance. The State Board's implementation policy does not apply in this case, since diazinon has not been identified as a priority pollutant by USEPA. Even if diazinon were a priority pollutant, the implementation policy does not compel site-specific objectives studies, but states that such studies should be considered, if certain criteria are met. Finally, there is no information available to the Regional Board that would suggest that the toxic effects of diazinon would be mitigated by any site specific conditions.

Comment 2: Geographic Applicability of the Proposed Site-Specific Diazinon Water Quality Objectives Needs Clarification

The analysis of alternative water quality objectives presented in Section 4.3 of the Staff Report applies to attainment of (compliance with) the proposed water quality objectives in the Feather River and Sacramento River main stems and certain named significant tributaries. If adopted as WQOs via the BPA, these objectives should apply only to the main stem rivers and the tributaries specifically named in Table III-2A (see Staff Report, Section 2, p. 17, re: Basin Plan Chapter II, Water Quality Objectives), as the application of such objectives has not been assessed for other tributaries not specifically identified. The following language should be added to clarify the proposed language in Chapter III of the Basin Plan (suggested text in italics):

- Pesticide concentrations shall not exceed the levels identified in Table III-2A. *The geographic extent of these objectives shall be limited to the reaches specified in the table.*

Alternatively, this proposed language could be added as a footnote to Table III-2A.

Response to Comment 2: Table III-2A specifically indicates to which water bodies the diazinon objectives apply. The proposed change appears to be redundant. Also see response to the City of Roseville's comment #2.

Comment 3: BPA Compliance Language Needs Clarification

The draft Basin Plan Amendment language contains some ambiguity regarding determinations of compliance with the diazinon TMDL requirements. We request the following change in the Basin Plan Amendment language:

Modify Chapter IV Implementation item # 3 to read as follows (suggested text in italics):

A discharger of diazinon will be considered to be in compliance with the control program for diazinon runoff into the Sacramento and Feather Rivers if the ~~allocations~~ *receiving water quality objectives* for diazinon are being met *at the nearest load allocation point downstream of the discharger, such points being at the I Street Bridge in the Sacramento River and the upstream tributary sites named in Table IV-5*.

Response to Comment 3: See response to the City of Roseville's Comment #5.

Comment 4: Wasteload Allocations Should be Restated

The City is very concerned about item #5 in the proposed BPA Implementation section as currently proposed (see Staff Report Section 2, p. 20), which sets wasteload allocations for all NPDES dischargers equal to the diazinon water quality objectives.

Replace the first sentence of the proposed Basin Plan Chapter IV Implementation item # 5 and make other modifications as follows (suggested text in italics):

~~The waste load allocations for all NPDES-permitted discharges are the diazinon water quality objectives.~~ *The waste load allocation for any NPDES-permitted discharge to the Sacramento River above the I Street Bridge or tributaries listed in Table IV-5 shall be a mass loading equal to the product of the water quality objectives times the actual discharge flow rate over the relevant time period (one hour for the acute objective; four days for the chronic objective), during such times when the diazinon concentration in the Sacramento River at the I Street Bridge or at upstream tributary sites listed in Table IV-5 exceeds a water quality objective, at the nearest listed site downstream of the discharge. If it is not demonstrated that a specific discharge caused or contributed to a measured downstream exceedance of water quality objectives, then that discharge will be deemed to be in compliance with these provisions. Municipal stormwater NPDES-permitted dischargers shall be considered to be in compliance with such waste load allocations provided that the discharger is fulfilling the pesticide control program provisions of the municipal stormwater NPDES permit and can demonstrate that substantive efforts are being made to reduce discharges of pollutants in urban runoff to the maximum extent practicable (MEP). NPDES permit provisions or amendments intended to implement the TMDL for municipal stormwater permits shall be MEP-based and allow for an iterative, adaptive management approach to address any exceedances of waste load allocations.* The presence of any diazinon in rainwater will be considered in determining compliance with waste load allocations*, and subtracted from the calculated loads actually contributed by NPDES-permitted discharges.*

Response to Comment 4: The Draft Basin Plan Amendment language and Staff Report have been changed to clarify the Regional Board's expectations regarding the actions to be taken by dischargers. The adaptive approach suggested by the Commenter underlies two key aspects of the proposed Basin Plan Amendment: 1) the Regional Board expects to review and potentially revise the proposed control program at least every five years; and 2) dischargers have an opportunity to provide the Regional Board with their plans for compliance with the allocations. Those plans may incorporate an adaptive, iterative approach.

The Basin Plan Amendment language has also been changed to make it clear that the discharger can provide any documentation regarding contributions of diazinon from sources outside of their jurisdiction, including diazinon in precipitation. The Regional

Board can consider that information in determining compliance with the waste load allocations.

It should be noted that the transport of diazinon in precipitation, then over the land surface, and to a stream is not a process that conserves all the diazinon initially in the precipitation. Although the diazinon in precipitation can be "subtracted" in determining compliance with the waste load allocation, the diazinon transport mechanism must be considered.

Regional Board staff does not recommend the Commenter's proposed changes. Those changes would make evaluation of compliance infeasible without a substantial increase in monitoring efforts on the part of all NPDES-permitted dischargers. Minimally, NPDES-permitted dischargers would need to monitor upstream and downstream of their discharge during dormant season storm events in order to determine whether the waste load allocations would apply. In addition, all NPDES dischargers would need to monitor flow on an hourly basis. These monitoring requirements would be in addition to any monitoring of the effluent itself.

Also see response to City of Roseville's Comment #6.

5. Wendell Kido, Chief, Policy and Planning; Sacramento Regional County Sanitation District

Comment 1. A c*omplete assessment of reasonable achievement and economic considerations for point source dischargers has not been performed.*

Response to Comment 1: As discussed in the Staff Report, the cancellation of urban uses of diazinon is expected to be sufficient for meeting the waste load allocations. No other treatment technology or management practice is expected to be required, so there is no basis for providing estimates of additional costs for compliance. Regional Board staff will consider incorporating additional cost estimates, if the necessary information to estimate such costs is provided. Such information would include: 1) Estimated diazinon concentration levels in NPDES discharges after June 30, 2008; 2) expected management practice or treatment requirements associated with reducing those estimated levels to the waste load allocations; and 3) estimated cost of the management practice or treatment technology.

Comment 2. *Implementation of Best Management Practices should be an alternative to wasteload allocations.*

Response to Comment 2: See response to the City of Roseville Comment #4.

6. Steve Beckley, President/CEO; California Plant Health Association

Comment 1. The Regional Board's correlation between pesticide use and water quality in section 1.3.2 fails to consider relevant weather patterns, pest concerns for any particular year and label changes regarding use.

Response to Comment 1: See response to MANA Comment 3.

Comment 2. The Regional Board provides no justification or legal support for the statement that the TMDL requirement can only be met by revising the Basin Plan.

Response to Comment 2: See response to MANA Comment 4.

Comment 3. The Regional Board's proposed site specific pesticide objective is not sufficiently narrow to ensure that the site specific numeric objective supercedes subsequent interpretations of the narrative portion of the pesticide objective and other narrative objectives. **Suggested Revision:** "Where more than one objective may be applicable, the most stringent objective applies <u>except when there is an adopted numeric objective. Where there is an adopted numeric objective, the numeric objective shall supercede the interpretation of any narrative objective.</u>"

Response to Comment 3: See response to MANA Comment 4. Regional Board staff believes that application of narrative objectives may also be required to protect the Sacramento and Feather Rivers from diazinon discharges.

For example, future studies may find that diazinon concentrations lower than the proposed numeric objective contribute to violations of applicable narrative objectives when found in combination with other pollutants. The Commenter's proposed revision would allow no further regulation of diazinon discharges in this circumstance. The Regional Board would need to impose disproportionate reductions on the dischargers of the other pollutants to address the violation of the narrative objective. Additional language has been added to the proposed Basin Plan Amendment to clarify this point.

Comment 4. Table III-2A should be amended to specifically limit application of the site specific pesticide objective to the main stems of the rivers identified. **Suggested revision:**"<u>Main stem of the</u> Sacramento River from Shasta Dam to Colusa Basin Drain (13) and <u>main stem of</u> the Colusa Basin Drain to I Street Bridge (30). <u>Main stem of the</u> Feather River from Fish Barrier Dam to Sacramento River (40).

Response to Comment 4: See response to Comment 2 from the City of Sacramento.

Comment 6. [7] The Implementation Chapter should be amended to reflect the suggested revisions and comments expressed in comment #4 above. **Suggested revision:** "For most pesticides, numerical water quality objectives have not been adopted. USEPA criteria and other guidance are also extremely limited. Since this situation is not likely to change in the near future, the Board will use the best available technical information to evaluate compliance with the narrative objectives. Where numerical water quality objectives have been adopted, the numeric objective shall apply and supercede the interpretation or application of any narrative objective."

Response to Comment 6: See response to Comment 3.

Comment 7. Compliance with the control program should be determined by compliance with the water quality objectives at the compliance point, not through compliance with the load allocations. **Suggested revision:** A discharger of diazinon will be considered to be in compliance with the control program for diazinon runoff into the Sacramento and Feather Rivers, if the ~~allocations~~ objectives for diazinon are being met at the identified point of compliance.

Response to Comment 7: Regional Board staff believes that compliance with both the allocations and water quality objectives is important. Non-compliance with the allocations will allow the Regional Board to determine where to focus its compliance and enforcement activities. If allocations are not met, but the water quality objectives are met, the Regional Board may still want to take an action to prevent future violations of the water quality objectives.

Comment 8. The proposed five year review in the implementation chapter is inconsistent with the Clean Water Act. **Suggested revision:** The Regional Water board will review the diazinon water quality objectives, the diazinon allocations, and the implementation provision in the Basin Plan at least once every ~~five~~ three years, beginning in 2006.

Response to Comment 8: The language has been changed to remove the reference to the diazinon water quality objectives. Clean Water Act § 303(c) only requires water quality standards to be reviewed every three years, but does not have the same provision for the allocations and implementation provisions.

[7] The comment number was provided by the Commenter and is kept for consistency. There is no "Comment 5".

Comment 9. Section 4, Water Quality Objectives for Diazinon, does not properly consider the "reasonable" elements contained with the Porter-Cologne Water Quality Control Act. [The Commenter provides an extensive discussion on this issue and touches several different topics for which the Commenter believes further Regional Board discussion or analysis is merited. The discussion also raises a different issue – the Regional Board did not consider the Porter-Cologne § 13241 requirements with respect to alternatives to diazinon or NPDES permit holders.]

Response to Comment 9: Regional Board staff believes that the Basin Plan Amendment as a whole is "reasonable". A regional board determines whether a proposed water quality objective satisfies the reasonableness standard of Section 13000 by considering the factors set forth in Section 13241.

With respect to the consideration of the CWC § 13241 factors for the proposed diazinon water quality objective, the staff report includes an adequate analysis of the costs, as well as the other factors that must be considered.

The Commenter indicates that the CWC § 13241 factors need to be considered for alternative pesticides to diazinon. CWC § 13241 applies to water quality objectives and the proposed Basin Plan Amendment does not include new water quality objectives that would apply to alternatives to diazinon. Therefore, the CWC § 13241 analysis that the Commenter states is absent is not required.

With respect to consideration of the achievability of objectives for NPDES dischargers, the staff report includes a discussion in section 5.5.3.1 and section 8.4. Further discussion of the achievability for NPDES dischargers has also been added to section 4.

Comment 10. The Implementation Plan fails to include or address time schedules for NPDES permit holders if the ban on urban uses is not effective.

Response to Comment 10: The proposed Basin Plan Amendment includes a provision for review and potential changes to the program of implementation, as necessary. When the review is conducted, consideration could be given to amending the time schedule for compliance.

7. Debra Denton, Ph. D., Environmental Scientist; US EPA Region 9 Monitoring and Assessment Office

Comment 1. Page 20, item 3: "A discharger of diazinon will be considered to be in compliance with the control program for diazinon runoff into the Sacramento and Feather Rivers, if the allocations for diazinon are being met".

Loading will be measured, and, hence, compliance with the control program and load allocations will be determined, near specified confluence locations; however, it should be noted that the objectives must be attained throughout the waters to which they apply. Compliance with the control program does not obviate the need for attainment of the water quality objectives throughout the listed waterbody. If compliance with the control program proves to be inadequate to ensure attainment of the water quality objectives throughout the Sacramento and Feather Rivers, additional or different control measures may be needed.

Response to Comment 1: Regional Board staff agrees that the water quality objectives apply throughout the Sacramento and Feather Rivers. The proposed Basin Plan Amendment has been changed to clarify this. In addition, another site for calculating the loading capacity in the lower Sacramento River has been added for the Sacramento River at Verona. Minimal orchard runoff is occurs below the Verona site, but the American River may contribute a significant amount of dilution. Discussion of this change has been added to the staff report.

Comment 2. Page 20, item 5: "The presence of any diazinon in rainwater will be considered in determining compliance with wasteload allocations."

It is not clear how the presence of diazinon in rainwater will be considered. Does this mean that the rainwater contribution of diazinon in an NPDES-permitted discharge will or will not count toward the wasteload allocation?

Response to Comment 2: The Basin Plan Amendment language has been changed to clarify this point. Dischargers would be given an opportunity to document what diazinon, if any, is contributed from sources outside of their jurisdiction. The Regional Board would take that information into consideration in determining compliance with the waste load allocation.

Comment 3. Page 20, item 6: "The Regional Water Board will review the diazinon water quality objectives, the diazinon allocation, and the implementation provisions in the Basin Plan at least once every five years, beginning in 2008."

The objectives should be reviewed at least once every three years, consistent with the requirements of 40 CFR 131.20.

Response to Comment 3: The reference to the diazinon water quality objectives has been struck from the proposed Basin Plan Amendment language.

Comment 4. Page 20, item 10: "If the calculated Load Allocation for the Feather River or Sacramento River at Colusa is greater than the Loading Capacity for those sites, then the Loading Capacity for that site applies."

Why is there no similar provision for the other sub-watersheds?

Response to Comment 4: The Regional Board is not proposing to establish either TMDLs or diazinon water quality objectives for the other sub-watersheds, so such a provision is not applicable for this Basin Plan Amendment.

Comment 5. Page 21, item 5 of the six goals, to determine whether alternatives to diazinon are causing surface water quality impacts.

USEPA supports the six goals for the orchard pesticide runoff. However, the evaluation of alternatives to pesticides needs to be assessed for both attainment of the pesticide chemical-specific and the Basin Plan's toxicity objective of "no toxics in toxic amounts". Add language to be specific under this goal for inclusion of the toxicity objective to be evaluated using the USEPA toxicity testing standardized procedures.

Response to Comment 5: A new monitoring goal # 6 has been added to state that monitoring efforts must determine whether the discharge contributes to toxicity due to additive or synergistic effects. Mention of the specific methods for meeting the monitoring goals are not included in the Basin Plan Amendment, but will be appropriate for any monitoring and reporting program developed in response to this Basin Plan Amendment. It should also be noted that the other sections of the Basin Plan already describe how compliance with the narrative toxicity will be evaluated (see pages III-8 and III-9; IV-16 through IV-18).

Comment 6. Page 22: The locations at which some of the load allocation factors for the sub-watersheds will apply are defined as "near" various reference points, e.g., "near its confluence with the Sacramento River", "near the town of Colusa".

How does the Regional Board define "near" in this context?

Response to Comment 6: Regional Board staff has provided more precise descriptions for the various sites described in the Basin Plan Amendment. For the other sites, "near" means downstream of any major inputs, but prior to entering the Sacramento River. A

precise definition cannot be given in some cases, since flow conditions and site accessibility may change the exact sampling location from one sampling event to another.

Comment 7. Page 28, available criteria for beneficial uses.

USEPA support the establishment of diazinon acute and chronic water quality objectives for these waterbodies. The criteria appear to be protective of both acute and chronic effects to surrogate and local threatened and endangered species, such as Chinook salmon. However, the concern that must be addressed is the potential for additive or synergistic effects of diazinon interacting with the multiple of chemicals co-occurring in the watershed. There are multiple pesticides such as pyrethroids increasing in usage in this watershed that have been demonstrated to be more than additive to fish (Denton et al., 2003). This TMD[L] must address this issue, possibly through the MOS by adding additional level for this explicit consideration.

Response to Comment 7: The Clean Water Act does not require that this proposed TMDL address the potential for additive toxicity from other pesticides. The proposed TMDL is being established to address the Section 303(d) listing for diazinon; therefore the margin of safety need only address the uncertainty associated with the diazinon TMDL and the diazinon water quality objective.

The Regional Board's Basin Plan currently contains a formula to address potential additive toxic effects due to pesticides (see page IV-35). The Regional Board (or USEPA) may, during the next update of the Clean Water Act Section 303(d) list, identify "toxicity due to pesticides" as causing non-attainment of water quality standards, if the evidence is in the record to support that conclusion. If such a listing is made, the Regional Board would develop a TMDL for those pesticides that in combination are causing the non-attainment of water quality standards.

Language has been added to the proposed Basin Plan Amendment to make it clear that the diazinon load allocations (and water quality objectives) represent a maximum level and that the Regional Board may require additional reductions to account for any additive toxicity effects.

Comment 8. Page 42, item 4.4.1 on Anti-degradation Policy

It is not clear how the Board addresses the issue of Anti-degradation in this TMDL. Please provide more clarification on how the anti-degradation policy has been met for this TMDL.

Response to Comment 8: The anti-degradation policy is addressed in Section 4.4.1 and 4.5 in the context of the proposed water quality objectives and in Sections 6.1.1.3 and 6.1.2.2 in the context of the proposed program of implementation (including the TMDL).

Additional discussion has been added to these sections that clarifies conformance of this proposed Basin Plan Amendment with applicable anti-degradation policies.

Comment 9. Page 53, item 5.2.2.6, summary of regulatory mechanism

The regulatory mechanisms available are prohibition, WDRs, or waiver. USEPA supports these options as consistent with the Plan for California Nonpoint Source Pollution Control (January 2000). However, the waiver of WDRs must have explicit monitoring requirements to evaluate the compliance of the TMDL and to evaluate the six runoff goals as stated in the BPA. The monitoring and evaluation must include both chemical-specific and toxicity testing approaches. The compliance of the TMDL must consider all reaches of the listed waterbody.

Response to Comment 9: Regional Board staff agrees that monitoring will be important for evaluating compliance with this Basin Plan Amendment. The monitoring goals/requirements in the Basin Plan Amendment support this. Regional Board staff will work to ensure that the necessary information is collected from the dischargers, Regional Board monitoring efforts, and other groups. Additional language has been added to the Monitoring and Reporting section to ensure that any waiver of WDRs or WDR addresses the monitoring goals established by this Basin Plan Amendment.

Regional Board staff has changed the proposed compliance point for calculating the loading capacity in the Sacramento River to a point (the Sacramento River at Verona) that should represent worst-case conditions (i.e. all major discharges will be present and the minimum amount of dilution is available).

8. Rodney R. McInnis, Acting Regional Administrator; US Department of Commerce; National Oceanic and Atmospheric Administration; National Marine Fisheries Service; Southwest Region

Comment 1. The Commenter stated that the proposed diazinon water quality objective should be protective of endangered species as long as diazinon is the single stressor in the system and provided analysis to support their conclusion.

Response to Comment 1: The Regional Board appreciates the analysis provided by the Commenter and the assessment of potential endangered species concerns.

Comment 2. The Commenter suggests that toxicity testing should be conducted to determine if the beneficial use is being attained and that the Regional Board should include a monitoring point in the Feather River above Honcut Creek.[8]

Response to Comment 2: See response to USEPA's Comments 5 and 9. Regional Board staff is not proposing specific monitoring points to meet the monitoring goals of this Basin Plan Amendment, but will consider the comment when monitoring plans are designed to comply with this Basin Plan Amendment.

Comment 3. The Commenter recommended changes to the Basin Plan Amendment language regarding compliance with the allocations. The Commenter stated that the language could result in toxic conditions upstream of the monitoring point.

Response to Comment 3: The proposed Basin Plan Amendment language has been changed to clarify that compliance with both the water quality objectives and allocations is required.

Comment 4. The Commenter supports the staff position that alternatives to diazinon could be problematic if exposure is not prevented. The Commenter stated that a strategy to reduce pesticide runoff, regardless of which pesticide is being used, is an excellent idea for the implementation program.

Response to Comment 4: The Regional Board appreciates the comment.

[8] The Commenter cited a personal communication from Karkowski [sic] that there were no detections of chlorpyrifos or methidathion. In response to concerns raised by NMFS, Regional Board staff prepared a summary of chlorpyrifos data, which can be found in Appendix A of the May 2003 draft (table A2.5). As can be seen from the table chlorpyrifos is infrequently detected. The limited detections are due to the varying quantification limits of different monitoring programs as well as the limited quantity of chlorpyrifos present. Even when detection limits are low, chlorpyrifos is not detected often and the detections are at or below the limit of quantification (4 or 5 parts per trillion).

9. David L. Harlow, Acting Field Supervisor; US Department of Interior; Fish and Wildlife Service; Sacramento Fish and Wildlife Office

Comment 1. The Commenter supports the position that aquatic invertebrates must be protected from diazinon impacts and that healthy invertebrate populations serve as the foundation of aquatic food webs.

Response to Comment 1: The Regional Board appreciates the comment.

Comment 2. The Commenter supports the proposed adoption of the CDFG criteria for diazinon.

Response to Comment 2: The Regional Board appreciates the comment.

Comment 3. The Commenter suggests that toxicity testing be conducted to provide assurance that the Sacramento and Feather Rivers are not being impaired by the additive or synergistic effects of other currently registered pesticides. The Commenter states that if such pollutants are identified a separate analysis should be triggered to determine methods to ensure the designated beneficial uses are attained.

Response to Comment 3: Regional Board staff have modified the monitoring goals to clarify that toxicity testing should be conducted (see response to USEPA Comment #5). Regional Board staff will use the 303(d) listing process to identify any pesticides that are causing non-attainment of standards, whether singly or in combination. A 303(d) listing would result in a separate TMDL analysis according to the priorities established by the Regional Board.

10. Bill Jennings, DeltaKeeper

> **Comment 1.** Before the Regional Board can allow degradation above non-detectable levels of diazinon, it must first make findings, pursuant to a formal anti-degradation analysis, that such degradation is consistent with the maximum benefit to the people of the State. Even should degradation be found to be in the public interest, the Board cannot allow degradation that causes unreasonable impairment of designated beneficial uses.

Response to Comment 1: See response to USEPA Comment #8. The diazinon objective is not expected to cause degradation. The "no diazinon" alternative is a more stringent standard than the selected alternative. However, neither alternative would degrade water quality within the meaning of the anti-degradation policies. Therefore, referring to the "no diazinon" alternative as a "no degradation" alternative was a misnomer. The Staff Report has been changed to clarify these issues.

> **Comment 2.** In establishing a water quality objective for diazinon, the Board must consider economic factors, pursuant to CWC § 13241. Staff addresses economic costs to growers. They ignore the economic consequences of degraded rivers.

Response to Comment 2: The California Water Code § 13241(d) requires the Regional Board to consider "Economic considerations" when establishing water quality objectives. The State Water Resources Control Board has written two guidance memos that address the scope of "Economic considerations" (Vassey, 1999; Attwater, 1994). Both memos indicate that the Regional Board has an affirmative duty to assess the cost of compliance with proposed water quality objectives. The Attwater memo states that "…the Boards are not required to engage in speculation. Rather, the Boards should review currently available information."

The "economic consequences of degraded rivers" need not be included in the Staff Report because the diazinon water quality objectives are expected to be protective of beneficial uses, so there is no anticipated cost due to loss of use. The Regional Board has received no information to the contrary.

> **Comment 3. The Proposed Water Quality Standards For Diazinon Are Not Protective** …the EPA guidelines for deriving numeric water quality criteria, while far superior to the PERA, are insufficiently protective. They:
>
> a. Are based upon a geometric mean of the results of toxicity studies.
> b. Evaluate impacts to relatively few species.
> c. Do not necessarily use the most sensitive species.
> d. Evaluate reproduction and growth endpoints but ignore other crucial biomarkers such as behavior, swimming performance, and zinobiotics (developmental & reproductive effects, endocrine disruption, carcinogenesis, etc.), and

e. Fail to adequately consider additive and synergistic effects.

Response to Comment 3: Regional Board staff does not agree that the proposed criteria are insufficiently protective. The USEPA guidelines referenced by the Commenter (USEPA, 1985) provide the most robust method for deriving aquatic life criteria currently available. The USEPA guidelines include a strict protocol for ensuring that only valid toxicity studies are included.

In deriving the diazinon criteria, the California Department of Fish & Game (CDFG) followed the USEPA guidelines. In addition, the CDFG only used toxicity results if the tests were run consistent with the American Society of Testing and Materials (ASTM) guidelines. The USEPA and ASTM guidelines were used to screen studies based on the scientific rigor of those studies and not to limit the number of species evaluated or sensitivity of the species evaluated.

The USEPA guidelines do allow for other data besides reproduction and growth to be used in deriving water quality criteria (see USEPA, 1985; p. 54). The Regional Board is not aware of other data on potential aquatic life effects that suggest a lower diazinon water quality objective than that proposed.

Lastly, the Regional Board's Basin Plan already includes an equation for determining whether several pollutants are having an additive effect on beneficial uses. The equation adds up the fractional toxicity contributed by each pollutant (ambient concentration divided by the toxicological threshold for that pollutant) to determine whether the beneficial use is impaired. This Basin Plan provision still applies even when a pollutant specific water quality objective is derived. The proposed Basin Plan Amendment has been changed to clarify this point.

Comment 4. The TMDL Fails To Account For Additive And Synergistic Effects. The TMDL load must be the normalized sum of the concentrations of diazinon - plus - other organophosphate pesticides - plus - carbamate pesticides - plus - other additive constituents like triazine insecticides and copper sulfate.

Response to Comment 4: See response to USEPA Comment #7. Regional Board staff has begun the process of evaluating other pesticides that could be impairing beneficial uses, either singly or in combination. It is anticipated the development of a Basin Plan Amendment based on this evaluation will take two to three years. No good reason exists to delay adoption and implementation of this TMDL since data for any related TMDL(s) are not yet available.

Comment 5. Three Compliance Locations Will Not Protect Beneficial Uses. The Implementation Plan must contain provisions that ensure that water quality standards for diazinon (incorporating additive and synergistic effects) are not exceeded at any point at any time in the Sacramento and Feather Rivers. It is

imperative that upstream monitoring points are established and individual growers who apply diazinon are required to monitor their discharge.

Response to Comment 5: See response to USEPA Comment #9 and NOAA Comment #3. Language has been added to the proposed Basin Plan Amendment to clarify that the diazinon objectives represent maximum levels and that further reductions may be necessary to address additive or synergistic effects.

Regional Board staff does not believe that the Basin Plan needs to mandate that individual growers monitor their discharge in order to demonstrate that the water quality objective and load/wasteload allocations are being achieved. The proposed Basin Plan Amendment has been modified to clarify that dischargers (either individually or as part of a group) are responsible for meeting the monitoring goals.

Comment 6. The Implementation Plan Is No Implementation Plan. There is essentially no description of the conditions or components of the waiver. Nor is there a discussion of accountability or the mechanics of implementation.

Response to Comment 6: The policy language referred to be the Commenter has been removed. The Basin Plan Amendment language has been modified to state that a prohibition of discharge will apply to discharges of diazinon unless: 1) objectives are met; or 2) a waiver of WDRs or WDRs addresses the discharge. Additional language has been added to require the submittal of a management plan that describes how applicable allocations will be met and requires that any applicable monitoring and reporting program be designed to meet the monitoring goals established.

Comment 7. A Waiver Is Not A Regulatory Program. Contrary to staff's claim, a waiver is not a regulatory mechanism. Effective regulation cannot exist without accountability.

Response to Comment 7: Regional Board staff does not agree with the Commenter's statement. CWC § 13269 clearly establishes a waiver as a regulatory mechanism and provides for accountability. The waiver must include conditions and must be reviewed every five years by the Regional Board (CWC § 13269 (a)). The Regional Board must require compliance with the conditions of the waiver (CWC § 13269 (e)). A discharger that does not comply with the waiver conditions can be assessed administrative or judicial civil liability (CWC § 13350). Although a different mechanism than waste discharge requirements or a prohibition of discharge, waivers are clearly one of the tools established in Porter-Cologne for the regulation of discharges.

Comment 8. Staff's Ranking Of Alternatives Is Bizarre. On a one to five scale, "None," meaning no regulatory mechanism, is ranked higher than

individual WDRs even though "None" has zero "0" certainty of ensuring compliance.

Response to Comment 8: The scoring referred to by the Commenter was used by Regional Board staff to evaluate eight different factors, including certainty in meeting objectives, relative to each available implementation alternative. The scoring was not used to "rank" alternatives, but to screen and compare alternatives.

Staff also reviewed each alternative with respect to its consistency with laws and policies. Staff clearly indicated that the "no regulatory mechanism" alternative was inconsistent with Porter-Cologne, the Basin Plan, and the Bay Protection Cleanup Plan. Staff, therefore, did not recommend a "no regulatory mechanism" alternative.

Comment 9. The Proposed Amendments Are Inconsistent With The Basin Plan. Since 1992, the Basin Plan has had narrative pesticide water quality objectives and a pesticide implementation plan that would have, if implemented, obviated the necessity for this TMDL. Staff now proposes an amendment that is fundamentally inconsistent with the explicit requirements of the existing Basin Plan.

Response to Comment 9: Regional Board staff does not agree that the proposed Basin Plan Amendment is inconsistent with the existing Basin Plan. The diazinon objective has been added to the Pesticide Water Quality Objectives section of the Basin Plan. That section clearly states that the most stringent objective (of the narrative and numeric objectives) applies. The proposed Amendment is also consistent with the pesticide implementation provisions contained in the Basin Plan (see discussion in Section 6.1.1.6). Also see response to Comment #6.

Comment 10. The Proposed Amendment and Plan Is Inconsistent With State and Federal Anti-degradation Policies. The staff report acknowledges that "[t]he increase in diazinon levels is considered a degradation of the high quality of the Sacramento and Feather Rivers." Public Review Draft at 6.1.1.3. However, despite repeated references to anti-degradation policies, there is no systematic anti-degradation analysis as required by the regulations. Indeed, the Amendment is blatantly inconsistent with state and federal anti-degradation policies.

Response to Comment 10: Anti-degradation analysis is required only if the new objectives will cause degradation. During the dormant spray season, the water quality objective will improve the "existing quality of waters," within the meaning of the anti-degradation policies. Any potential degradation during the non-dormant season is merely hypothetical and does not require further findings. Diazinon levels in the Sacramento and Feather Rivers should not increase because (1) there is no evidence from which to conclude dischargers will change their use practices during the non-dormant season; (2)

the presence of diazinon in the Rivers is due mostly to rainfall runoff during the dormant season as demonstrated by historical monitoring results; and (3) proposed federal labeling requirements would restrict use to one annual dormant-season application for the crops of primary concern (USEPA, 2002b). The Staff Report has been changed to discuss these findings and to correct inconsistencies in the discussion of degradation.

11. Ed Romano, Glenn County Agricultural Commissioner

Comment 1. The 80 ppb [sic – ppt] TMDL limit you propose for Diazinon in the Sacramento River is counter productive, it moves users from a product that there is a lot of knowledge and information on to products that we don't fully understand. Also, these products may not be friendly to fish and other aquatic life.

Response to Comment 1: The Regional Board believes it is important to control diazinon runoff, since diazinon concentrations have been at levels above applicable criteria. The Staff Report recognizes that other products may impact beneficial uses. The proposed Basin Plan Amendment therefore includes policies that should minimize the potential for those impacts, including the requirement that a discharger evaluate impacts of alternative pesticides. In addition, we will continue to work with the Department of Pesticide Regulation and the County Agricultural Commissioners to address any water quality impacts caused by pesticides.

Comment 2. I would suggest that your TMDL take into consideration the other important factors that must be present to cause an effect that would be detrimental to aquatic life. These factors are, duration of the event, location of the event, and how often.

In other words, length, location, and how many times it occurs in one years time. Therefore, I offer the following:

Whatever TMDL you set should have parameters, such as, more than one exceedence during a years' time, the duration of the event and the location of the event. These factors should be taken into consideration before a violation of the TMDL has occurred.

Response to Comment 2: The proposed Basin Plan Amendment includes both TMDL and water quality objective provisions that address this comment. The loading capacity, waste load allocations, and load allocations are consistent with the proposed diazinon water quality objectives. The diazinon water quality objectives include the averaging period for the objective (i.e. duration), the allowable frequency of exceedance (i.e. once every three years on the average), and the location (i.e. the Sacramento and Feather Rivers).

12. Ken Mayer, Chief, Scientific Branch, Department of Fish and Game, Office of Spill Prevention and Response

Comment 1. We support the new water quality objective for diazinon of 0.080 µg/L as a 1-hour average and 0.050 µg/L as a 4-day average. These criteria were developed in 2000 by the DFG under contract to CALFED (DFG, Office of Spill Prevention and Response, Administrative Report 00-3).

Response to Comment 1: The Regional Board appreciates the comment.

Comment 2. Studies suggest that the toxicities of diazinon and chlorpyrifos are additive, and other organophosphate insecticides likely exhibit additive toxicities in the presence of diazinon. The diazinon criteria should be considered conservative in the presence of other organophosphate compounds.

Response to Comment 2: The proposed Basin Plan Amendment has been modified to clarify that the proposed diazinon objectives represent a maximum allowable level and that additional reductions may be required to address any additive or synergistic effects.

References

Attwater, W.R. 1994. Memo from William R. Attwater, Chief Counsel, State Water Resources Control Board to Regional Water Board Executive Officers and Attorneys. Guidance on Consideration of Economics in the Adoption of Water Quality Objectives. 4 January 1994.

Karkoski, J., Menconi, M., Briggs, K., and G. Davis. 2002. Draft program of implementation report for the control of diazinon in the Sacramento and Feather Rivers. California Regional Water Quality Control Board, Central Valley Region staff report. May 2002.

Reyes, E. and M. Menconi. 2002. Agricultural practices and technologies; draft report. California Regional Water Quality Control Board, Central Valley Region staff report. May 2002.

Smith, D.W. 2003. Electronic mail from David W. Smith, U.S. Environmental Protection Agency to Joe Karkoski, California Regional Water Quality Control Board, Central Valley Region regarding Waste Load Allocations for the Sac/Feather Diazinon TMDL. 8 May 2003.

USEPA 1985. Guidelines for deriving numerical national water quality criteria for the protection of aquatic organisms and their uses. Office of Research and Development, Washington, D.C.

USEPA. 2002a. Response to "*Comments of Makhteshim-Agan of North America, Inc. and Makhteshim Chemical Works, Ltd. On U.S. EPA's Revised Risk Assessments for Diazinon: Volumes I-III."* Memorandum from Thomas M. Steeger and David Jones; Environmental Fate and Effects Division to John Herbert and Susan Lewis; Special Review and Reregistration Division. Office of Prevention, Pesticides, and Toxic Substances. United States Environmental Protection Agency. Washington, D.C. February 15, 2002.

USEPA. 2002b. Interim Reregistration Eligibility Decision for Diazinon. Case No. (0238). July 31, 2002. Lois A. Rossi, Director. Special Review and Reregistration Division. Office of Prevention, Pesticides, and Toxic Substances. Washington, D.C.

Vassey, S.K. 1999. Memo from Sheila K. Vassey, Senior Staff Counsel, State Water Resources Control Board to Stephan Lorenzato, TMDL Coordinator, State Water Resources Control Board. Economic Considerations in TMDL Development and Basin Planning. 27 October 1999.

Zalom, F.G., M.N. Oliver, D.E. Hinton. 1999. Alternatives to chlorpyrifos and diazinon dormant sprays. Statewide IPM Project, Water Resources Center, and Ecotoxicology Program. University of California. Davis, CA. Final Report, September 1999.